

Video one: the “const” keyword

const in Declarations

- As always, read from the inside out.

These are equivalent!

```
int const * arr[6];
const int * arr[6];
```

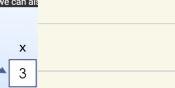
“arr is an array of 6 pointers to const ints”

const pointer vs. pointer-to-const

- const pointer

The pointer value (an address) itself cannot change.

```
int x = 3;
int * const ptr = &x;
```



to change we can also

- Pointer-to-const

You can't use the pointer to change the object.

```
int x = 3;
int const * ptr = &x;
const int * ptr = &x;
```



Note: You can also have both a const pointer-to-const.

reference-to-const

- A reference creates an alias for an object.

```
int x = 3;
int &y = x;
y = 10; // legal, changes x too
```



- Reference-to-const

The alias can't be used to change the object.

```
int x = 3;
int const &y = x;
y = 10; // error
x = 10; // still legal
```

References can never be re-bound, so a literal const reference isn't meaningful. However, “const reference” is often used loosely to mean “reference-to-const”.

video two: “const” conversion

For the pointer:

1 we can not convert a pointer-to-const to a regular pointer

const conversions

```
int const x = 3;
int const *cptr = &x;
int *ptr = cptr; // this line
```

Are all the const objects still “safe”?

Answer: No.

*ptr = 10

We can NOT...

...convert a pointer-to-const to a regular pointer

2 we can not change a pointer-to-constant to a “const” pointer.

const conversions

```
int const x = 3;
int const *cptr = &x;
int * const ptr = cptr; // this line
```

Are all the const objects still “safe”?

Answer: No.

ptr = 10

We can NOT...

...convert a pointer-to-const to a const pointer.

For value

1 we can convert a “const value” into a regular value

const conversions

```
int const x = 3;
int y = x; // this line
```

Are all the const objects still “safe”?

Answer: Yes.

x = 3

We can...

...convert a const value into a regular value. (We're just making a copy.)

video three: intro to “struct”

Compound Objects

- We can use both struct and class to create class-type objects in C++.

We'll focus on struct for now.

The struct definition creates a new type called Person.
In this, we create some local Person objects, but they're not initialized.

Initializing structs

- You can use an initializer list to initialize each member of a struct.

You can also do this for assignment, unlike with an array.

```
struct Person {
    int age;
    string name;
    bool isNinja;
};

int main() {
    Person alex;
    Person jon = { 25, "jon", true };
    alex = { 75, "granny", false };
}
```

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